

WHAT IS CLAIMED IS:

- 1           1. In a folding knife having a handle portion and a blade mounted for pivotal  
2           movement about an axis adjacent to one end of said handle portion between a  
3           fully closed and a fully open position, means for assisting in movement of said  
4           blade to said open position, said assisting means comprising:
  - 5           a) a tang portion formed integrally with said blade and through which said axis  
6           passes;
  - 7           b) a camming member extending outwardly from said tang portion in a direction  
8           parallel to and spaced from said axis, said camming member including a  
9           camming surface movable through a predetermined path as said blade is  
10          moved about said axis; and
  - 11          c) A cantilever spring having a first end anchored to said handle portion, and a  
12          second, free end having a terminal portion positioned to engage said camming  
13          surface throughout at least a first portion of said predetermined path and to  
14          exert a biasing force urging said blade toward said fully open position over a  
15          second portion of said predetermined path.
- 1           2. The assisting means of claim 1 wherein said terminal portion comprises a lobe  
2           extending laterally from said free end.
- 1           3. The assisting means of claim 2 wherein said lobe contacts said camming  
2           surface when said blade is in said fully closed position.

- 1           4. The assisting means of claim 3 wherein said spring exerts a biasing force on  
2           said camming surface resiliently maintaining said blade in said fully closed  
3           position.
- 1           5. The assisting means of claim 4 wherein said second portion of said  
2           predetermined path forms a contiguous part of said first portion.
- 1           6. The assisting means of claim 1 wherein said camming surface and said  
2           terminal portion of said spring free end are so shaped and relatively  
3           positioned, that said first portion of said predetermined path is less than the  
4           full range of said predetermined path.
- 1           7. The assisting means of claim 6 wherein said first portion extends from the  
2           position of said camming surface when said blade is in said fully closed  
3           position over a majority of said full range of said predetermined path, said  
4           camming surface and said terminal portion being out of mutual contact over a  
5           third portion of said predetermined path extending from said first portion to  
6           the position of said camming surface when said blade is in said fully open  
7           position.
- 1           8. The assisting means of claim 7 wherein the biasing force imparted to said  
2           blade by said spring acting upon said camming surface is such that the  
3           momentum developed by said blade during unimpeded thereof through said  
4           second portion of said predetermined path is sufficient to move said blade to  
5           said fully open position throughout said third portion of said predetermined  
6           path.

- 1           9. The assisting means of claim 8 wherein said third portion of said  
2           predetermined path is between about 10% and about 40% of said full range of  
3           said predetermined path.
- 1           10. The assisting means of claim 9 wherein said second portion of said  
2           predetermined path is between about 10% and about 40% of said full range of  
3           said predetermined path.
- 1           11. A folding knife with spring assisted blade movement, said knife comprising:  
2           a) a handle having a pair of spaced handle pieces and a longitudinal axis;  
3           b) a blade having an integral tang pivotally mounted to said handle for  
4           movement with respect thereto about a pivot axis perpendicular to said  
5           longitudinal axis and extending through said handle pieces and said tang,  
6           between a fully closed position, wherein at least a portion of said blade is  
7           received between said handle pieces, and a fully open position, wherein said  
8           blade extends outwardly from said handle substantially along said longitudinal  
9           axis;
- 10          c) a camming member extending outwardly from said tang and movable  
11          therewith between first and second positions corresponding to said fully  
12          closed and fully open positions of said blade, respectively, said camming  
13          member having a camming surface spaced outwardly from said pivot axis;
- 14          d) a cantilever spring having a first end portion fixedly attached to one of said  
15          handle pieces and a second, terminal end portion in mutual contact with said  
16          camming surface through a first portion of movement of said camming  
17          member extending from said first position for less than the full range of

18 movement to said second position, said spring being out of contact with said  
19 camming surface through a second portion of movement of said camming  
20 member extending from the terminus of said first portion of movement of said  
21 camming member to said second position thereof.

1 11. The knife of claim 10 and further including a stop member affixed to said  
2 tang at a position spaced from said pivot axis, and a pair of surface portions on at  
3 least one of said handle pieces, contact of said stop member with one of said  
4 surface portions defining the limit of movement of said blade toward said fully  
5 open position, and contact of said stop member with the other of said surface  
6 portions defining the limit of movement of said blade toward said fully closed  
7 position.

1 12. The knife of claim 11 wherein said stop member includes first and second  
2 portions extending outwardly from said tang portions on opposite sides thereof,  
3 and both of said handle pieces have a pair of said surface portions, said first and  
4 second portions of said stop member respectively contacting one of said surface  
5 portions of each of said handle pieces to define the limit of movement of said  
6 blade toward said fully open position, and contacting the other of said surface  
7 portions of each of said handle pieces to define the limit of movement of said  
8 blade toward said fully closed position.

1 13. The knife of claim 10 and further including means for blocking movement of  
2 said blade away from said fully open position, said blocking means comprising  
3 portions of said tang and one of said handle pieces.

1 14. The knife of claim 10 wherein said first portion of movement of said  
2 camming member corresponds to rotation of said blade from said fully closed  
3 position through about 60% to about 90% of said camming member movement  
4 from said first to said second position.

1 15. The knife of claim 10 wherein said handle pieces have spaced, opposing  
2 surfaces, and said one of said handle pieces has a cavity in said opposing surfaces  
3 thereof, a portion of said spring including said first end portion being contained  
4 within said cavity.

1 16. The knife of claim 15 wherein said cavity has a depth such that said spring  
2 and said opposing surface of said one of said handle pieces are substantially  
3 coplanar.

1 17. The knife of claim 16 wherein said one of said handle pieces has a through  
2 opening adjoining said cavity and wherein said spring extends from said cavity  
3 into said opening to said second end portion.

1 18. The knife of claim 17 wherein said second end portion includes a lobed  
2 portion contacting said camming surface throughout said first portion of  
3 movement of said camming member.

1 19. The knife of claim 10 wherein said camming surface includes an arcuate  
2 portion substantially coaxial with said pivot axis extending between rounded  
3 ends.

1 20. The knife of claim 19 wherein said terminal end portion of said spring  
2 contacts one of said rounded ends of said camming surface when said camming  
3 member is in said first position.